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What is claimed is:

1. A system, comprising:

   a spatially distributed multimode optical fiber;

   a pixelated photodetector configured to detect optical signals provided from said fiber;

   a wireless digital module coupled to said photodetector and adapted to wirelessly transmit a wireless signal encoding a plurality of detected variables of the optical signals;

   a wireless receiver adapted to receive the wireless signal; and

   a signal processing module coupled to said wireless receiver and adapted to decode and interpret the plurality of detected variables of the optical signals, a portion of the plurality of detected variables automatically interpreted as corresponding to higher-order-to-lower-order-coupled light when the portion of the plurality of detected variables correspond to light incident only within a circular area of the photodetector defined by an inner radius of an annulus created by higher order modes of light propagated along the optical fiber.

2. The system of claim 1, further comprising a coherent optical source optically couplable to said optical fiber.

3. The system of claim 1, further comprising a laser diode optically couplable to said optical fiber.

4. The system of claim 1, further comprising a laser light pointer optically couplable to said fiber.

5. The system of claim 1, further comprising an electronic driver adapted to control light provided to said fiber.

6. The system of claim 1, wherein said fiber is integrating.

7. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient movement.

8. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient respiration.

9. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient heart rate.

10. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of any combination of patient movement, respiration rate, and heart rate.

11. The system of claim 1, wherein said fiber converts higher order modes to lower order modes.

12. The system of claim 1, wherein said fiber converts lower order modes to higher order modes.

13. The system of claim 1, wherein the optical signals comprise a speckle pattern.

14. The system of claim 1, wherein the optical signals comprise a plurality of high order excitation modes.

15. The system of claim 1, wherein the optical signals comprise a plurality of high order excitation modes that are proportional to a perturbation along said fiber.

16. The system of claim 1, wherein said photodetector is optically couplable to said optical fiber.

17. The system of claim 1, wherein said photodetector provides an output proportional an integrated perturbation along said fiber.

18. The system of claim 1, wherein said photodetector comprises a photodetector array.

19. The system of claim 1, wherein said photodetector comprises a digital photodetector.

20. The system of claim 1, wherein said photodetector comprises a digital photodetector array.

21. The system of claim 1, wherein said photodetector comprises a CCD camera.

22. The system of claim 1, wherein said photodetector comprises a CMOS camera.

23. The system of claim 1, wherein the wireless signal encodes a plurality of digitized images of the optical signals.

24. The system of claim 1, further comprising a high order mode transmission element optically couplable to said optical fiber.

25. The system of claim 1, further comprising a filter configured to pass only lower order modes converted from higher order modes.

26. The system of claim 1, further comprising a filter configured to pass only higher order modes converted from lower order modes.

27. The system of claim 1, further comprising a matched spatial filter.

28. The system of claim 1, further comprising a matched spatial filter adapted to spatially filter light provided to said fiber.

29. The system of claim 1, further comprising a matched spatial filter adapted to filter the optical signals.

30. The system of claim 1, further comprising a matched spatial filter adapted to spatially filter the plurality of detected variables of the optical signals.

31. The system of claim 1, further comprising a matched spatial filter adapted to filter a plurality of digitized images provided by said photodetector.

32. The system of claim 1, wherein said signal processing module is adapted to decode a plurality of digitized images and to interpret one or more variables of the plurality of digitized images.

33. The system of claim 1, wherein said signal processing module provides an output proportional to an absolute value of $\Delta P/\Delta t$, where P is an integrated perturbation along said fiber and t is time.

34. The system of claim 1, wherein said signal processing module is adapted to provide matched spatial filtering of a plurality of digitized images to optimize a signal-to-noise ratio.

35. The system of claim 1, wherein said signal processing module is adapted to process a predetermined portion of the optical signals.

36. The system of claim 1, wherein said signal processing module is adapted to process a portion of the optical signals, the portion associated with a human vital sign.

37. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the fiber.

38. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables.

39. The system of claim 1, wherein said signal processing module is adapted to interpret fluctuations in a speckle pattern of the optical signals.

40. The system of claim 1, wherein said signal processing module is adapted to interpret a conversion of excitation modes of the optical signals in a spatially filtered region.

41. The system of claim 1, wherein said signal processing module is adapted to interpret an incidence of lower order excitation modes of the optical signals in a predetermined spatial region.

42. The system of claim 1, wherein said signal processing module is adapted to interpret an incidence of high order excitation modes of the optical signals in a predetermined spatial region.

43. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables, the frequency corresponding to a patient vital sign.

44. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables, the frequency corresponding to a patient movement.

45. The system of claim 1, wherein said signal processing module is adapted to interpret a change in an optical power of the plurality of detected variables.

46. The system of claim 1, wherein said signal processing module is adapted to interpret a change in angle of an excitation mode of the optical signals.

47. The system of claim 1, wherein said signal processing module is adapted to interpret a change in excitation modes of the optical signals.

48. The system of claim 1, wherein said signal processing module is adapted to monitor the plurality of detected variables of the for a change in a patient's vital sign.

49. The system of claim 1, wherein said signal processing module is adapted to monitor the plurality of detected variables for a change in a patient's movement.

50. The system of claim 1, wherein said signal processing module is adapted to automatically monitor the plurality of detected variables for a change in patient movement, respiration rate, or pulse rate.

51. The system of claim 1, further comprising:

a human support structure supporting said fiber.

52. The system of claim 1, further comprising:

a human support structure adjacent said fiber.

53. The system of claim 1, further comprising:

a mattress adjacent said fiber.

54. The system of claim 1, further comprising:

a pad adjacent said fiber.

55. The system of claim 1, further comprising:

a carpet adjacent said fiber.

56. The system of claim 1, wherein said system comprises an STM sensor.

57. The system of claim 1, wherein said system comprises a HOME sensor.

58. A method, comprising:

transmitting from a wireless digital pixelated photodetector coupled to an fiber optic sensor a signal encoding a plurality of detected variables of optical signals emerging from the fiber optic sensor;

receiving the signal at a wireless receiver;

decoding the signal at a signal processing module coupled to a wireless receiver; and

interpreting the plurality of detected variables of the decoded signal, a portion of the plurality of detected variables automatically interpreted as corresponding to higher-order-to-lower-order-coupled light when the portion of the plurality of detected variables correspond to light incident only within a circular area of the photodetector defined by an inner radius of an annulus created by higher order modes of light propagated along the fiber optic sensor.

59. A method, comprising:

spatially distributing a multimode optical fiber in a predetermined pattern for facilitating sensing of a predetermined type of perturbation;

transmitting optical signals from the spatially distributed integrating multimode optical fiber;

detecting the optical signals at a pixelated photodetector; and

wirelessly transmitting a wireless digital signal encoding a plurality of detected variables of the optical signals, a portion of the plurality of detected variables automatically interpreted as corresponding to higher-order-to-lower-order-coupled light when the portion of the plurality of detected variables correspond to light incident only within a circular area of the photodetector defined by an inner radius of an annulus created by higher order modes of light propagated along the optical fiber.

60. The method of claim 59, further comprising:

receiving the wireless signal at a wireless receiver.

61. The method of claim 59, further comprising:

decoding the wireless signal.

62. The method of claim 59, further comprising:

decoding the wireless signal at a signal processing module coupled to a wireless receiver.

63. The method of claim 59, further comprising:

decrypting the wireless signal.

64. The method of claim 59, further comprising:

frequency despreading the wireless signal.

65. The method of claim 59, further comprising:

demodulating the wireless signal.

66. The method of claim 59, further comprising:

sampling the wireless signal.

67. The method of claim 59, further comprising:
digitizing the wireless signal.

68. The method of claim 59, further comprising:
detecting the wireless signal.

69. The method of claim 59, further comprising:
demultiplexing the wireless signal.

70. The method of claim 59, further comprising:
spatially filtering the optical signals.

71. The method of claim 59, further comprising:
spatially filtering the wireless signal.

72. The method of claim 59, further comprising:
spatially filtering the detected variables.

73. The method of claim 59, further comprising:
Fourier transforming the wireless signal.

74. The method of claim 59, further comprising:
interpreting the wireless signal.

75. The method of claim 59, further comprising:
interpreting the plurality of detected variables.

76. The method of claim 59, further comprising:
monitoring the wireless signal.

77. The method of claim 59, further comprising:
monitoring the plurality of detected variables.

78. The method of claim 59, further comprising:

providing notification of a predetermined change in the wireless signal.

79. The method of claim 59, further comprising:

providing notification of a predetermined change in the plurality of detected variables.

80. A machine-readable medium comprising instructions for activities comprising:

decoding a wireless signal obtained from a wireless digital pixelated photodetector coupled to an optical fiber spatially distributed in a predetermined pattern for facilitating sensing of a predetermined type of perturbation, the wireless signal encoding a plurality of detected variables of optical signals emerging from the spatially distributed fiber optic sensor; and

interpreting the plurality of detected variables of the decoded signal, a portion of the plurality of detected variables automatically interpreted as corresponding to higher-order-to-lower-order-coupled light when the portion of the plurality of detected variables correspond to light incident only within a circular area of the photodetector defined by an inner radius of an annulus created by higher order modes of light propagated along the optical fiber.